National Water Conditions

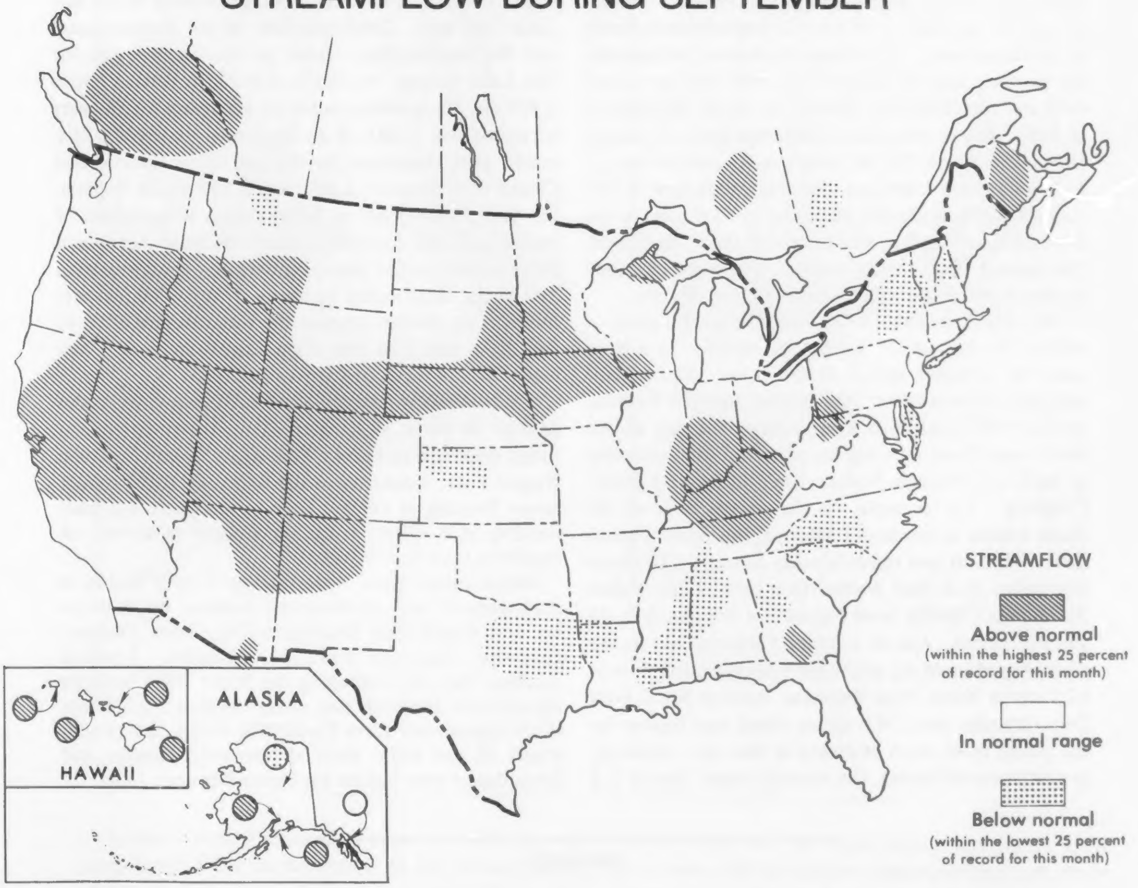
(Formerly the Water Resources Review)

UNITED STATES
Department of the Interior
Geological Survey

CANADA
Department of the Environment
Water Resources Branch

SEPTEMBER 1982

STREAMFLOW DURING SEPTEMBER



Streamflow in the United States and southern Canada was generally in the normal range or above that range during September. Monthly mean flows were below the normal range in parts of at least 12 States, and were lowest of record in parts of Louisiana.

Flood peak discharges on several streams in northern Utah were highest of record and equaled or exceeded the 100-year flood at several locations.

Reservoir storage generally decreased but was near or above average at most index reservoirs at month's end.

STREAMFLOW CONDITIONS DURING SEPTEMBER 1982

Streamflow generally decreased seasonally from the higher flows of August in Hawaii, West Virginia, southwestern Canada and at most index stations in the northern Rocky Mountain States, and in most coastal States extending from New Hampshire south to Florida and then west to eastern Texas; flows generally increased in Quebec, New Brunswick, Kentucky, and Rhode Island, and were variable elsewhere. Monthly mean flows were below the normal range—within the lowest 25 percent of record—in parts of at least 12 States located mostly in the Southeast. In northern Louisiana, for example, the monthly mean discharge of 4.1 cubic feet per second (cfs) and the daily mean flow of 3.0 cfs on September 9 at Saline Bayou near Lucky (drainage area, 154 square miles) were lowest for the month in 43 years of record. In southwestern Louisiana, monthly mean flow of Calcasieu River near Oberlin decreased to 87 percent of the September median flow but was within the normal range. (See graph.) Daily mean flows were also lowest of record for the month in parts of Arizona and New Mexico.

Monthly mean flows were above the normal range—within the highest 25 percent of record—in a large area that included several States in the mid-continent and most western States, and another area that included most of the lower Ohio River Valley. Monthly and/or daily mean flows were highest of record for September in parts of California, Nevada, Utah, Idaho, and British Columbia. For example, on the eastern slope of the Sierra Nevada in northern California, the monthly mean flow of 232 cfs and the daily mean flow of 1,110 cfs on September 26 at West Walker River below Little Walker River, near Coleville were highest for the month in 45 years of record. Also in northern California but on the Sierra Nevada western slope, the monthly mean flow of 82.5 cfs at North Fork American River at North Fork Dam (drainage area, 342 square miles) was highest for the month in 42 years of record at that site. Similarly, in north-central Nevada, the monthly mean flow of 118 cfs and the daily mean discharge of 734 cfs on September 27 at Humboldt River at Palisade (drainage area, 5,010 square miles) were highest for September in 77 years of record. In southern Idaho, monthly mean flows at index stations on the Snake River located at Heise and at Weiser were highest for September in 73 years of record.

Runoff from heavy rains late in the month caused severe flooding in northern Utah, particularly in the Salt Lake City area. Combined flow of the Surplus Canal and the Jordan River, which are the main drains for Salt Lake County, reached a record-high flow of about 2,800 cfs. The previous combined maximum for 38 years of record was 2,200 cfs on September 18, 1978. Estimated peak discharges on Big and Little Cottonwood Creeks were between 1,000 and 1,200 cfs on September 26. Flood flows on both streams were highest of record and will probably exceed the flow that would be expected on the long-term average, of only once in 100 years. Responding to nearly 7 inches of rain and inflow from swollen streams, the water surface of Great Salt Lake rose 0.30 foot from August and was 2 feet higher than at the end of September 1981.

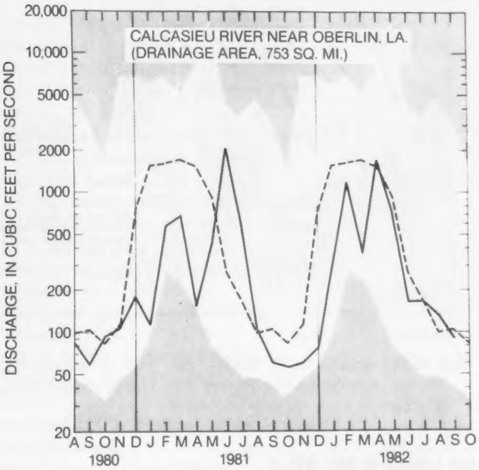
Flash floods on September 13, 14 caused extensive damage in parts of Letcher, Pike, Knott, Perry, and Floyd Counties, in eastern Kentucky. Yonts Fork and Wrights Fork, tributaries to the Kentucky River, caused severe flooding in Letcher County, and there was flash flooding at Rowland in Lincoln County as a result of overflows from Neal's Creek.

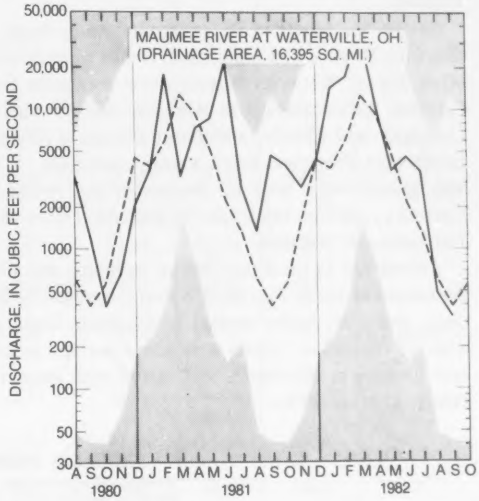
Rapid runoff from rains totaling 3 to 9 inches in southwestern and south-central Indiana on September 1–3 caused flash flooding in Clay, Green, Jackson, Lawrence, Vigo, and Washington Counties. Lowland flooding also occurred along the White River between Elliston and Hazelton and along the East Fork White River downstream from Portersville during this period. Stages on the White River at Newberry, Elliston, and Edwardsport were highest for September since 1926.

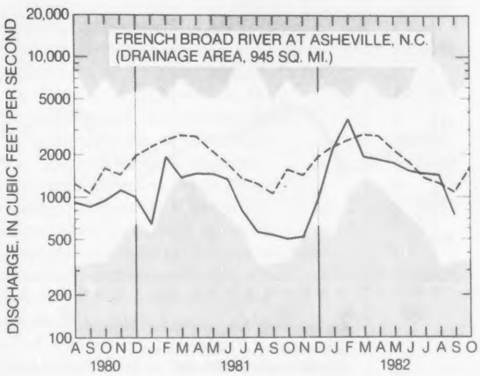
CONTENTS

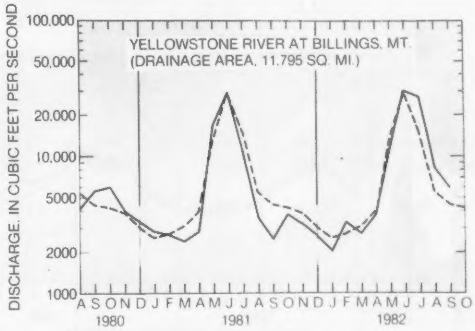
SURFACE WATER – MONTHLY MEAN DISCHARGE IN KEY STREAMS

Unshaded area indicates range between highest and lowest record for the month. Dashed line indicates median of monthly values for reference period, 1951–80. Heavy line indicates mean for current period.









In east-central California, a small earth-fill dam on Long Creek failed on September 26 and released about 48 acre-feet of water. Several homes were destroyed in Big Pine. The failure occurred following three days of heavy rain in the area.

Reservoir storage generally decreased during September but remained above the long-term average at most of the index reservoirs.

The combined flow of three large rivers—Mississippi, St. Lawrence, and Columbia—remained in the above-normal range for the 4th consecutive month and averaged 813,600 cubic feet per second during September. These three rivers, which together drain more than half of the conterminous United States, provide a quick useful check on the status of the Nation's water resources.

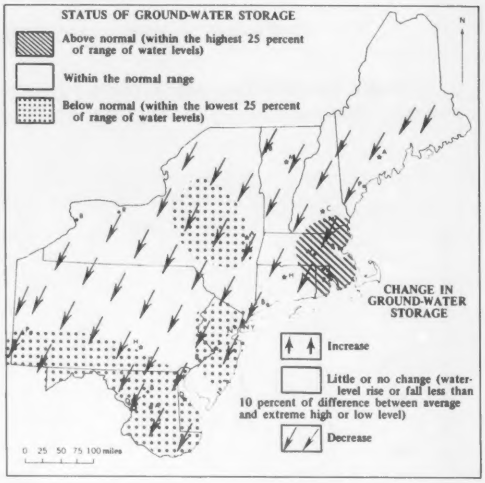
Streamflow for the 1982 water year that ended September 30, 1982 was in the normal range or above that range at most locations in the United States and southern Canada. Notable exceptions included one large area of below-normal streamflow in Louisiana and parts of Mississippi and Arkansas, and another in southern Canada, north of the Great Lakes. (See map on page 10.)

GROUND-WATER CONDITIONS DURING SEPTEMBER 1982

In the northeastern States, ground-water levels continued to decline seasonally in most of the Northeast. Levels continued to be below average in Maryland and Delaware, and were below-average also in much of New Jersey and east-central New York State. Levels remained above average in some areas of southeastern New England.

In the southeastern States, ground-water levels declined in Virginia and Mississippi; trends were mixed in other States. Water levels were above average in North Carolina, below average in Arkansas and in much of Louisiana and Florida, and about average in Alabama. Levels were above and below average elsewhere. A new high ground-water level for September was reached in Kentucky, and new low levels for September occurred in Tennessee and Louisiana.

Among the Great Lakes States, including also Iowa, ground-water levels rose in Minnesota, changed little in Ohio, and were below average in Michigan, Iowa, and most of Wisconsin. Levels were above average in Iowa, near average in Wisconsin, and mixed with respect to average in other States.

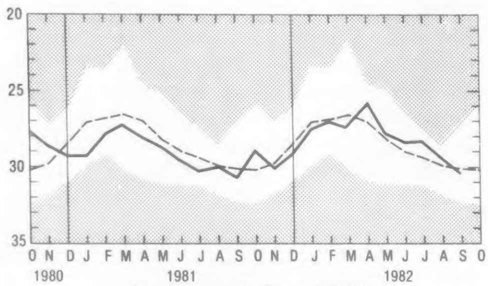


Map shows ground-water storage near end of September and change in ground-water storage from end of August to end of September.

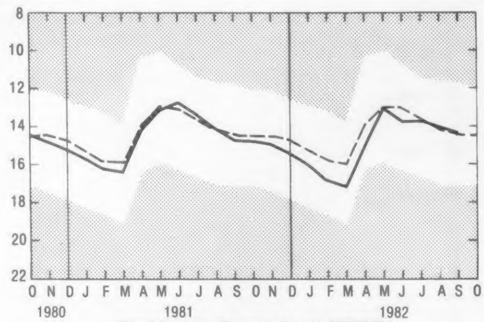
MONTH-END GROUND-WATER LEVELS IN KEY WELLS

UNSHADED AREA INDICATES RANGE BETWEEN HIGHEST AND LOWEST RECORD FOR THE MONTH
DASHED LINE INDICATES AVERAGE OF MONTHLY LEVELS, IN PREVIOUS YEARS
HEAVY LINE INDICATES LEVEL FOR CURRENT PERIOD

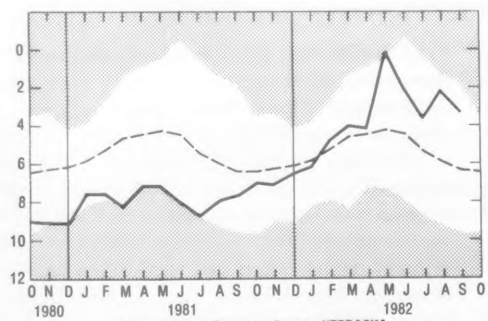
WATER LEVEL—FEET BELOW LAND-SURFACE DATUM



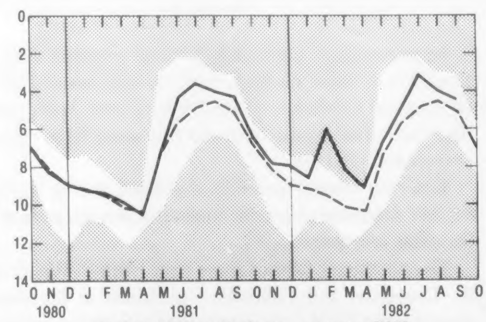
Near Centreville, Bibb County, **ALABAMA**
Copper Ridge and Chepultepec Dolomite
29 years of record, 1952–80



Near Ishpeming, Marquette County, **MICHIGAN**
Sand and gravel of Pleistocene age
20 years of record, 1961–80



Near Ashland, Saunders County, **NEBRASKA**
Sand and gravel deposits of Pleistocene age
48 years of record, 1933–80



Near Boise (Meridian), Ada County, southwestern **IDAHO**
Quaternary sand and gravel
47 years of record, 1934–80

WATER LEVELS IN KEY OBSERVATION WELLS IN SOME REPRESENTATIVE AQUIFERS IN THE CONTERMINOUS UNITED STATES

Aquifer and location	Current water level in feet below land-surface datum	Departure from average in feet	Net change in water level in feet since: Last month	Net change in water level in feet since: Last year	Year records began	Remarks
Glacial drift at Hanska, south-central Minnesota (U.S. well no. 6)	-6.38	+1.75	+1.14	-0.95	1943	
Glacial drift at Roscommon in north-central part of Lower Peninsula, Michigan (U.S. well no. 1)	-5.00	+0.11	-0.15	+0.19	1935	
Glacial drift at Marion, Iowa (U.S. well no. 1)	-5.43	+1.12	-1.25	+0.29	1941	
Glacial drift at Princeton in northwestern Illinois (U.S. well no. 1)	-11.02	+2.73	-1.58	-1.30	1943	
Petersburg Granite, southeastern Piedmont near Fall Zone, Colonial Heights, Virginia (U.S. well no. 4)	-15.52	+0.57	-0.30	+1.76	1939	
Glacial outwash sand and gravel, Louisville, Kentucky (U.S. well no. 2)	-18.52	+7.38	-0.07	-0.57	1946	
500-foot sand aquifer near Memphis, Tennessee (U.S. well no. 2)	-104.02	-15.45	-0.02	-0.37	1941	September low.
Granite in eastern Piedmont Province, Chapel Hill, North Carolina (U.S. well no. 5)	-40.69	+2.12	-0.50	+4.39	1931	
Sparta Sand in Pine Bluff industrial area, Arkansas	-230.20	-25.11	+2.70	+13.15	1958	
Copper Ridge and Chepultepec Dolomites, Centreville, Alabama	-30.3	-0.3	-0.9	+0.4	1952	
Limestone aquifer on Cockspur Island, Savannah area, Georgia (U.S. well no. 6)	-24.35	-6.04	+0.25	+1.15	1956	
Sand and gravel in Puget Trough, Tacoma, Washington	-105.48	+2.76	+0.60	+3.81	1952	
Pleistocene glacial outwash gravel, North Pole, northern Idaho (U.S. well no. 3)	-457.6	+1.0	-0.1	+7.5	1929	
Snake River Group: southwestern Snake River Plain aquifer, at Eden, Idaho	-122.6	-8.7	+1.1	-0.9	1957	September low.
Terrace gravel at Missoula, Montana	-15.30	-1.97	-1.50	-1.40	1960	September low.
Alluvial sand and gravel, Platte River Valley, Nebraska (U.S. well no. 6)	-3.30	+3.18	-1.13	+4.23	1935	
Ogallala Formation, Kansas Agricultural Experiment Station at Colby in the High Plains of northwestern Kansas	-125.57	-7.62	+1.04	+1.68	1947	
Alluvium and Paso Robles, clay, sand, and gravel, Santa Maria Valley, California (U.S. well no. 11)	-127.02	+19.72	-0.17	-7.48	1957	
Berrendo-Smith well in San Andres Limestone, Roswell artesian basin of Pecos Valley, New Mexico (U.S. well no. 1-A)	-67.62	-1.60	+0.74	-5.77	1966	
Hueco bolson, El Paso area, Texas	-260.76	-14.67	+2.51	-2.13	1965	September low.
Evangeline aquifer, Houston area, Texas	-328.68	-27.46	-3.55	-5.68	1965	Alltime low.

Among the western States, ground-water levels rose in Washington, rose in most of Idaho and Utah, and declined in North Dakota and in much of Nebraska and southern California. Trends were mixed in other States. Levels were above average in Washington, and below average in Arizona and in much of Idaho, Kansas, New Mexico, and Texas. Levels were above and below average elsewhere. New low ground-water levels for September were recorded in Idaho, Montana, Arizona, and Texas, and a new alltime low level was reached in Texas in 17 years of record.

USABLE CONTENTS OF SELECTED RESERVOIRS NEAR END OF SEPTEMBER 1982

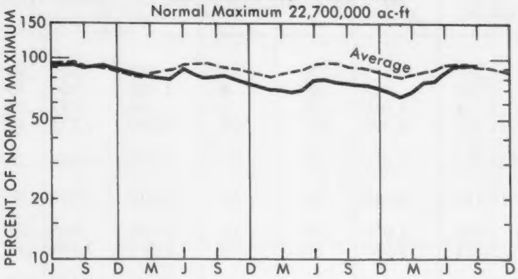
[Contents are expressed in percent of reservoir capacity. The usable storage capacity of each reservoir is shown in the column headed "Normal maximum."]

Reservoir Principal uses: F–Flood control I–Irrigation M–Municipal P–Power R–Recreation W–Industrial	Percent of normal maximum				Normal maximum (acre-feet)[a]
	End of Sept. 1982	End of Sept. 1981	Average for end of Sept.	End of Aug. 1982	
NORTHEAST REGION					
NOVA SCOTIA					
Rossignol, Mulgrave, Falls Lake, St. Margaret's Bay, Black, and Ponhook Reservoirs (P)	47	44	38	55	[b]226,300
QUEBEC					
Allard (P)	47	82	61	76	280,600
Gouin (P)	84	72	67	46	6,954,000
MAINE					
Seven reservoir systems (MP)	57	88	59	68	4,098,000
NEW HAMPSHIRE					
First Connecticut Lake (P)	74	78	78	82	76,450
Lake Francis (FPR)	73	85	78	74	99,310
Lake Winnipesaukee (PR)	77	84	64	83	165,700
VERMONT					
Harriman (P)	67	66	64	73	116,200
Somerset (P)	65	57	72	70	57,390
MASSACHUSETTS					
Cobble Mountain and Borden Brook (MP)	80	70	74	83	77,920
NEW YORK					
Great Sacandaga Lake (FPR)	57	72	62	71	786,700
Indian Lake (FMP)	84	88	59	89	103,300
New York City reservoir system (MW)	71	60	....	84	1,680,000
NEW JERSEY					
Wanaque (M)	81	54	68	89	85,100
PENNSYLVANIA					
Allegheny (FPR)	41	43	41	43	1,180,000
Pymatuning (FMR)	86	107	82	95	188,000
Raystown Lake (FR)	67	66	59	68	761,900
Lake Wallenpaupack (PR)	67	47	56	73	157,800
MARYLAND					
Baltimore municipal system (M)	73	75	86	78	255,800
SOUTHEAST REGION					
NORTH CAROLINA					
Bridgewater (Lake James) (P)	92	89	83	94	288,800
Narrows (Badin Lake) (P)	92	93	98	92	128,900
High Rock Lake (P)	65	72	65	72	234,800
SOUTH CAROLINA					
Lake Murray (P)	85	83	67	87	1,614,000
Lakes Marion and Moultrie (P)	81	81	67	86	1,862,000
SOUTH CAROLINA--GEORGIA					
Clark Hill (FP)	74	40	57	81	1,730,000
GEORGIA					
Burton (PR)	97	90	79	97	104,000
Sinclair (MPR)	89	79	81	87	214,000
Lake Sidney Lanier (FMPR)	57	41	54	61	1,686,000
ALABAMA					
Lake Martin (P)	92	87	77	95	1,373,000
TENNESSEE VALLEY					
Clinch Projects: Norris and Melton Hill Lakes (FPR)	44	36	37	36	2,229,300
Douglas Lake (FPR)	34	26	33	52	1,394,000
Hiwassee Projects: Chatuge, Nottely, Hiwassee, Apalachia, Blue Ridge, Ocoee 3, and Parksville Lakes (FPR)	64	51	59	73	1,012,000
Holston Projects: South Holston, Watauga, Boone, Fort Patrick Henry, and Cherokee Lakes (FPR)	55	46	45	57	2,880,000
Little Tennessee Projects: Nantahala, Thorpe, Fontana, and Chilhowee Lakes (FPR)	62	55	57	66	1,478,000
WESTERN GREAT LAKES REGION					
WISCONSIN					
Chippewa and Flambeau (PR)	84	71	74	77	365,000
Wisconsin River (21 reservoirs) (PR)	87	50	63	73	399,000
MINNESOTA					
Mississippi River headwater system (FMR)	33	33	32	35	1,640,000
MIDCONTINENT REGION					
NORTH DAKOTA					
Lake Sakakawea (Garrison) (FIPR)	92	75	91	92	22,700,000
SOUTH DAKOTA					
Angostura (I)	81	50	72	84	127,600
Belle Fourche (I)	....	19	31	57	185,200
Lake Francis Case (FIP)	79	68	68	77	4,834,000
Lake Oahe (FIP)	85	66	....	89	22,530,000
MIDCONTINENT REGION—Continued					
SOUTH DAKOTA—Continued					
Lake Sharpe (FIP)	99	100	100	100	1,725,000
Lewis and Clarke Lake (FIP)	94	92	97	94	477,000
NEBRASKA					
Lake McConaughy (IP)	74	73	66	74	1,948,000
OKLAHOMA					
Eufaula (FPR)	80	77	81	83	2,378,000
Keystone (FPR)	86	84	93	91	661,000
Tenkiller Ferry (FPR)	90	89	90	94	628,200
Lake Altus (FIMR)	55	9	46	72	133,000
Lake O'The Cherokees (FPR)	84	88	81	86	1,492,000
OKLAHOMA--TEXAS					
Lake Texoma (FMPRW)	92	82	92	95	2,722,000
TEXAS					
Bridgeport (IMW)	95	31	45	99	386,400
Canyon (FMR)	93	91	73	94	385,600
International Amistad (FIMPW)	90	100	84	93	3,497,000
International Falcon (FIMPW)	78	101	76	79	2,668,000
Livingston (IMW)	99	100	83	100	1,788,000
Possum Kingdom (IMPRW)	91	89	99	92	570,200
Red Bluff (PI)	14	16	24	14	307,000
Toledo Bend (P)	86	88	82	88	4,472,000
Twin Buttes (FIM)	39	36	32	43	177,800
Lake Kemp (IMW)	87	57	84	94	268,000
Lake Meredith (FWM)	48	36	41	47	796,900
Lake Travis (FIMPRW)	77	87	77	103	1,144,000
THE WEST					
WASHINGTON					
Ross (PR)	96	93	91	98	1,052,000
Franklin D. Roosevelt Lake (IP)	101	98	103	100	5,022,000
Lake Chelan (PR)	92	90	85	84	676,100
Lake Cushman (PR)	79	91	91	102	359,500
Lake Merwin (P)	99	98	93	104	245,600
IDAHO					
Boise River (4 reservoirs) (FIP)	67	45	47	75	1,235,000
Coeur d'Alene Lake (P)	79	76	64	98	238,500
Pend Oreille Lake (FP)	100	87	91	98	1,561,000
IDAHO--WYOMING					
Upper Snake River (8 reservoirs) (MP)	77	38	47	82	4,401,000
WYOMING					
Boysen (FIP)	100	89	84	100	802,000
Buffalo Bill (IP)	96	60	80	98	421,300
Keyhole (F)	28	22	45	29	190,400
Pathfinder, Seminoe, Alcova, Kortes, Glendo, and Guernsey Reservoirs (I)	50	40	43	54	3,056,000
COLORADO					
John Martin (FIR)	3	5	12	3	364,400
Taylor Park (IR)	81	52	59	84	106,200
Colorado–Big Thompson project (I)	59	49	58	33	722,600
COLORADO RIVER STORAGE PROJECT					
Lake Powell; Flaming Gorge, Fontenelle, Navajo, and Blue Mesa Reservoirs (IFPR)	92	81	....	92	31,620,000
UTAH--IDAHO					
Bear Lake (IPR)	88	62	59	91	1,421,000
CALIFORNIA					
Folsom (FIP)	76	62	59	87	1,000,000
Hetch Hetchy (MP)	92	62	58	98	360,400
Isabella (FIR)	65	30	27	74	568,100
Pine Flat (FI)	72	32	37	69	1,001,000
Clair Engle Lake (Lewiston) (P)	87	71	73	93	2,438,000
Lake Almanor (P)	90	69	52	97	1,036,000
Lake Berryessa (FIMW)	90	73	77	92	1,600,000
Millerton Lake (FI)	69	33	35	76	503,200
Shasta Lake (FIPR)	80	56	66	86	4,377,000
CALIFORNIA--NEVADA					
Lake Tahoe (IPR)	90	27	53	92	744,600
NEVADA					
Rye Patch (I)	74	36	54	92	194,300
ARIZONA--NEVADA					
Lake Mead and Lake Mohave (FIMP)	87	83	72	86	27,970,000
ARIZONA					
San Carlos (IP)	8	24	14	9	1,073,000
Salt and Verde River system (IMPR)	66	53	36	68	2,073,000
NEW MEXICO					
Conchas (FIR)	73	47	83	74	330,100
Elephant Butte and Caballo (FIPR)	34	31	23	32	2,453,000

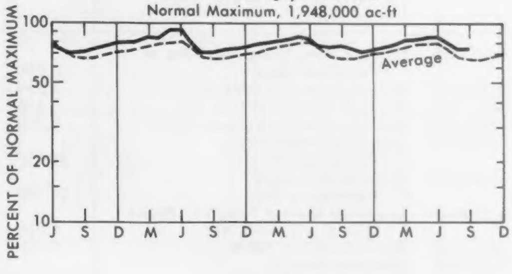
[a]1 acre-foot = 0.0436 million cubic feet = 0.326 million gallons = 0.504 cubic feet per second day.
[b]Thousands of kilowatt-hours (the potential electric power that could be generated by the volume of water in storage).
Correction on last month's report: Headings on 4th column of reservoir table should read "End of July 1982".

USABLE CONTENTS OF SELECTED RESERVOIRS AND RESERVOIR SYSTEMS, JUNE 1979 TO SEPTEMBER 1982

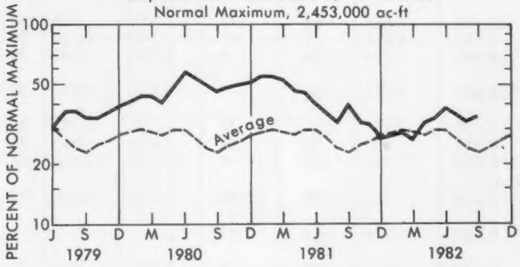
Lake Sakakawea, North Dakota
Normal Maximum 22,700,000 ac-ft



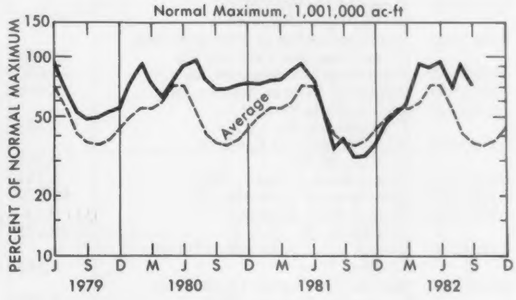
Lake McConaughy, Nebraska
Normal Maximum, 1,948,000 ac-ft



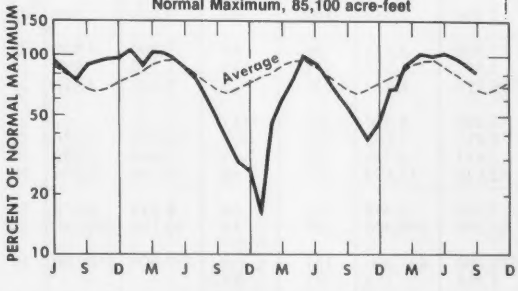
Elephant Butte and Caballo, New Mexico
Normal Maximum, 2,453,000 ac-ft



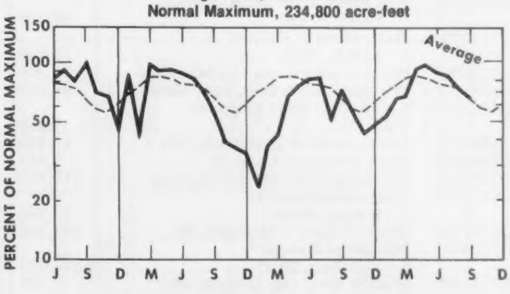
Pine Flat, California
Normal Maximum, 1,001,000 ac-ft



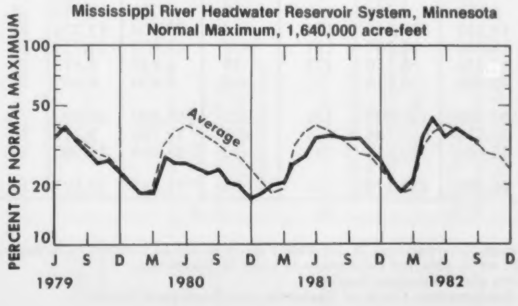
Wanaque, New Jersey
Normal Maximum, 85,100 acre-feet



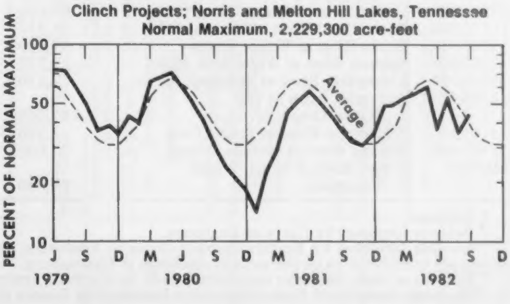
High Rock, North Carolina
Normal Maximum, 234,800 acre-feet



Mississippi River Headwater Reservoir System, Minnesota
Normal Maximum, 1,640,000 acre-feet



Clinch Projects; Norris and Melton Hill Lakes, Tennesssee
Normal Maximum, 2,229,300 acre-feet



Provisional data; subject to revision

FLOW OF LARGE RIVERS DURING SEPTEMBER 1982

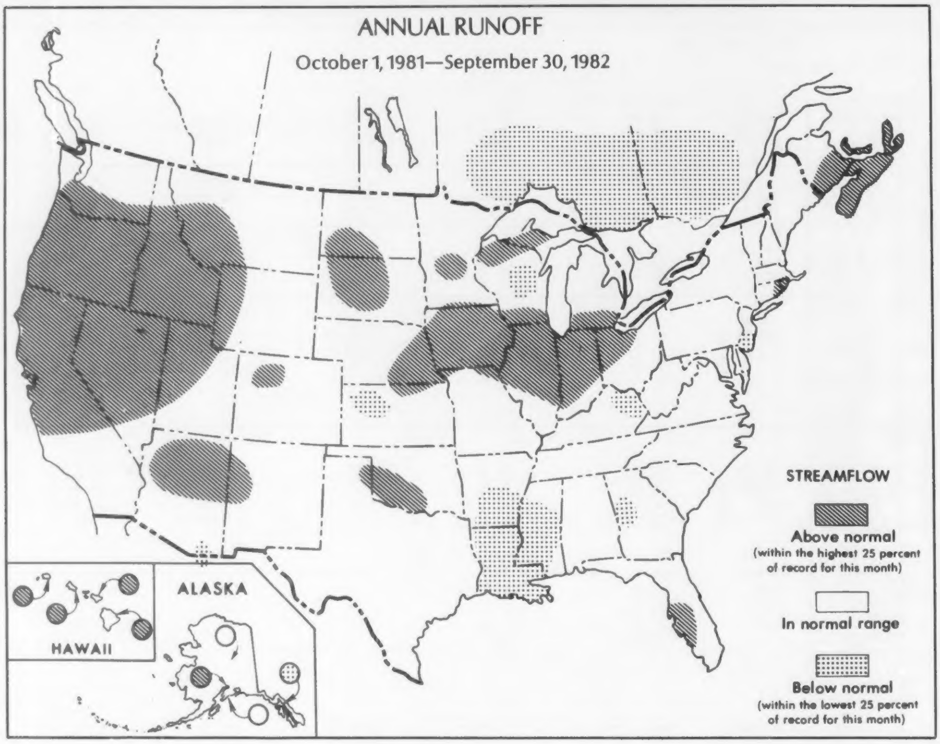
Station number	Stream and place of determination	Drainage area (square miles)	Mean annual discharge through September 1980 (cubic feet per second)	September 1982: Monthly mean discharge (cubic feet per second)	Percent of median monthly discharge, 1951–80	Change in discharge from pervious month (percent)	Discharge near end of month: Cubic feet per second	Million gallons per day	Date
01014000	St. John River below Fish River at Fort Kent, Maine	5,690	9,647	6,113	129	+127	5,770	3,729	30
01318500	Hudson River at Hadley, N.Y	1,664	2,909	698	63	-4	1,400	900	30
01357500	Mohawk River at Cohoes, N.Y	3,456	5,734	1,040	59	-3	980	633	30
01463500	Delaware River at Trenton, N.J	6,780	11,750	4,390	102	-18	4,290	2,772	30
01570500	Susquehanna River at Harrisburg, Pa	24,100	34,530	5,010	68	-34	7,560	4,886	28
01646500	Potomac River near Washington, D.C.	11,560	[1] 11,490	2,440	89	-42	3,040	1,964	30
02105500	Cape Fear River at William O. Huske Lock near Tarheel, N.C.	4,810	5,005	1,070	59	-62	1,300	840	30
02131000	Pee Dee River at Peedee, S.C	8,830	9,851	3,070	59	-50	3,770	2,436	29
02226000	Altamaha River at Doctortown, Ga	13,600	13,880	4,215	84	-44	3,790	2,449	27
02320500	Suwannee River at Branford, Fla	7,880	6,987	5,010	99	-30	4,610	2,979	30
02358000	Apalachicola River at Chattahoochee, Fla	17,200	22,570	13,500	114	-37	12,500	8,080	30
02467000	Tombigbee River at Demopolis lock and dam near Coatopa, Ala	15,400	23,300	2,620	68	-70	660	426	30
02489500	Pearl River near Bogalusa, La	6,630	9,768	1,846	81	-67	1,740	1,124	30
03049500	Allegheny River at Natrona, Pa	11,410	[1] 19,480	4,854	120	-9	5,300	3,430	24
03085000	Monongahela River at Braddock, Pa.	7,337	[1] 12,510	4,955	154	-7	4,550	2,940	22
03193000	Kanawha River at Kanawha Falls, W. Va	8,367	12,590	4,100	121	-22	4,190	2,708	23
03234500	Scioto River at Higby, Ohio	5,131	4,547	801	76	-11	875	565	31
03294500	Ohio River at Louisville, Ky[2]	91,170	116,000	33,360	143	+6	23,700	15,320	26
03377500	Wabash River at Mount Carmel, Ill	28,635	27,220	12,862	188	+29	6,200	4,010	30
03469000	French Broad River below Douglas Dam, Tenn	4,543	6,798	4,016	142	-39	......	......	...
04084500	Fox River at Rapide Croche Dam, near Wrightstown, Wis[2]	6,150	4,163	2,015	94	-18	1,492	964	25
04264331	St. Lawrence River at Cornwall, Ontario–near Massena, N.Y[3]	299,000	242,700	270,000	104	-3	267,000	172,600	30
050115	St. Maurice River at Grand Mere, Quebec	16,300	25,150	14,700	79	+178	11,400	7,370	30
05082500	Red River of the North at Grand Forks, N. Dak	30,100	2,551	1,260	102	-33	1,220	788	23
05133500	Rainy River at Manitou Rapids, Minn.	19,400	12,830	8,520	80	-43	7,500	4,850	29
05330000	Minnesota River near Jordan, Minn.	16,200	3,402	1,633	171	+12	1,320	853	30
05331000	Mississippi River at St. Paul, Minn	36,800	[1] 10,610	6,587	105	+16	6,800	4,390	30
05365500	Chippewa River at Chippewa Falls, Wis.	5,600	5,100	6,284	196	+113	......	......	...
05407000	Wisconsin River at Muscoda, Wis	10,300	8,617	7,105	121	+29	10,100	6,530	22
05446500	Rock River near Joslin, Ill	9,551	5,873	3,920	132	-45	3,450	2,229	30
05474500	Mississippi River at Keokuk, Iowa	119,000	62,620	57,800	133	+6	37,100	23,980	30
06214500	Yellowstone River at Billings, Mont	11,796	7,038	5,949	132	-28	6,310	4,078	30
06934500	Missouri River at Hermann, Mo	524,200	79,490	108,000	199	+4	90,100	58,230	27
07289000	Mississippi River at Vicksburg, Miss[4]	1,140,500	576,600	421,800	151	-2	387,000	250,100	27
07331000	Washita River near Dickson, Okla.	7,202	1,368	354	91	-49	......	......	...
08276500	Rio Grande below Taos Junction Bridge, near Taos, N. Mex	9,730	725	1,080	425	+42	1,250	807	30
09315000	Green River at Green River, Utah.	40,600	6,298	4,201	152	+13	4,230	2,733	24
11425500	Sacramento River at Verona, Calif	21,257	18,820	22,310	184	+24	23,600	15,250	21
13269000	Snake River at Weiser, Idaho	69,200	18,050	16,100	121	+35	18,430	11,911	27
13317000	Salmon River at White Bird, Idaho	13,550	11,250	6,150	132	-35	6,920	4,472	27
13342500	Clearwater River at Spalding, Idaho	9,570	15,480	2,644	85	-50	9,450	6,107	27
14105700	Columbia River at The Dalles, Oreg[5]	237,000	193,100	121,800	126	-27	107,800	69,670	27
14191000	Willamette River at Salem, Oreg.	7,280	23,510	5,786	145	+36	12,760	8,247	28
15515500	Tanana River at Nenana, Alaska.	25,600	23,460	32,156	102	-32	23,000	14,900	30
8MF005	Fraser River at Hope, British Columbia.	83,800	96,290	128,175	150	-26	91,453	59,107	29

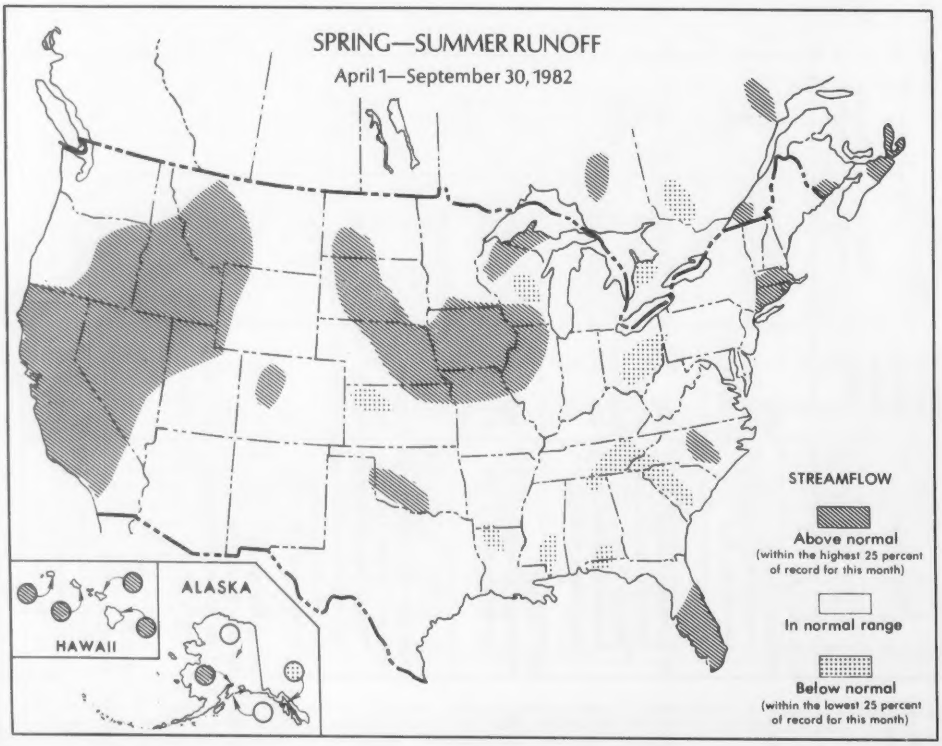
[1] Adjusted.
[2] Records furnished by Corps of Engineers.
[3] Records furnished by Buffalo District, Corps of Engineers, through International St. Lawrence River Board of Control. Discharges shown are considered to be the same as discharge at Ogdensburg, N.Y. when adjusted for storage in Lake St. Lawrence.
[4] Records of daily discharge computed jointly by Corps of Engineers and Geological Survey.
[5] Discharge determined from information furnished by Bureau of Reclamation, Corps of Engineers, and Geological Survey.

DISSOLVED SOLIDS AND WATER TEMPERATURES FOR SEPTEMBER AT DOWNSTREAM SITES ON SIX LARGE RIVERS

Station number	Station name	September data of following calendar years	Stream discharge during month	Dissolved-solids concentration during month[a]		Dissolved-solids discharge during month[a]			Water temperature during month[b]		
			Mean (cfs)	Minimum (mg/L)	Maximum (mg/L)	Mean (tons per day)	Minimum (tons per day)	Maximum (tons per day)	Mean in°C	Mini-mum, in°C	Maxi-mum, in°C
	NORTHEAST										
01463500	Delaware River at	1982	4,387	118	131	1,450	1,296	1,864	21.5	18.5	24.0
	Trenton, N.J.	1945–81	5,515	63	149	......	523	6,700	.....	14.0	32.0
	(Morrisville, Pa.)	(Extreme yr)		(1977)	(1965)		(1966)	(1974)			
			[c]4,272								
04264331	St. Lawrence River at	1982	272,000	165	166	121,000	119,000	123,000	18.5	17.0	19.0
	Cornwall, Ontario, near	1975–81	288,900	164	175	130,000	120,000	142,000	19.0	15.0	22.5
	Massena, N.Y.	(Extreme yr)		(1980)	(1979)		(1977)	(1976)			
	median streamflow at		[c]259,400								
	Ogdensburg, N.Y.										
	SOUTHEAST										
0728900	Mississippi River at	1982	421,800	207	255	255,000	213,000	354,000	26.0	22.5	28.0
	Vicksburg, Miss.	1975–81	372,100	185	277	239,000	116,000	472,000	26.0	21.0	30.0
		(Extreme yr)		(1977)	(1981)		(1976)	(1979)			
			[c]286,450								
	WESTERN GREAT LAKES REGION										
03612500	Ohio River at lock and dam	1982	146,000	*136	*200	......	*25,100	*152,100	.....	21.5	26.5
	53, near Grand Chain, Ill.	1955–81	114,900	117	314	......	9,190	304,000	.....	17.0	29.5
	(25 miles west of Paducah,	(Extreme yr)		(1965)	(1965)		(1961)	(1975)			
	Ky.; streamflow station		[c]89,720								
	at Metropolis, Ill.)										
	MIDCONTINENT										
06934500	Missouri River at Hermann,	1982	104,000	213	404	90,900	67,200	158,000	22.5	19.5	25.5
	Mo. (60 miles west of St.	1975–81	74,480	204	521	74,000	46,900	154,000	23.0	18.0	28.0
	Louis, Mo.)	(Extreme yr)		(1977)	(1980)		(1976)	(1977)			
			[c]54,090								
	WEST										
14128910	Columbia River at	1982	123,000	80	85	27,600	20,000	38,700	19.5	17.0	21.0
	Warrendale, Oreg.	1975–81	117,000	73	102	29,300	16,800	50,300	19.0	17.0	21.5
	(streamflow station	(Extreme yr)		(1976)	(1977,79)		(1981)	(1976)			
	at The Dalles, Oreg.)		[c]97,120								

[a]Dissolved-solids concentrations when not analyzed directly, are calculated on basis of measurements of specific conductance.
[b]To convert °C to °F: $[(1.8 \times °C) + 32] = °F$.
[c]Median of monthly values for 30-year reference period, water years 1951–80, for comparison with data for current month.
*Maximum and minimum values are for the first 27 days of the month.


ANNUAL RUNOFF
October 1, 1981—September 30, 1982
HAWAII
ALASKA
STREAMFLOW
Above normal
(within the highest 25 percent of record for this month)
In normal range
Below normal
(within the lowest 25 percent of record for this month)


SPRING—SUMMER RUNOFF
April 1—September 30, 1982
HAWAII
ALASKA
STREAMFLOW
Above normal
(within the highest 25 percent of record for this month)
In normal range
Below normal
(within the lowest 25 percent of record for this month)

NATIONAL WATER CONDITIONS

September 1982

Based on reports from the Canadian and U.S. Field offices; completed October 12, 1982

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EXPLANATION OF DATA

Cover map shows generalized pattern of streamflow for the month based on 18 index stream-gaging stations in Canada and *164* index stations in the United States. Alaska and Hawaii inset maps show streamflow only at the index gaging stations that are located near the points shown by the arrows.

Streamflow for the current month is compared with flow for the same month in the 30-year reference period, 1951–80. Streamflow is considered to be *below the normal range* if it is within the range of the low flows that have occurred 25 percent of the time (below the lower quartile) during the reference period. Flow is considered to be *above the normal range* if it is within the range of the high flows that have occurred 25 percent of the time (above the upper quartile).

Flow higher than the lower quartile but lower than the upper quartile is described as being *within the normal range*. In the National Water Conditions, the median is obtained by ranking the 30 flows for each month of the reference period in their order of magnitude; the highest flow is number 1, the lowest flow is number 30, and the average of the 15th and 16th highest flows is the median. One-half of the time you would expect the flows for the month to be below the median and one-half of the time to be above the median.

Statements about *ground-water levels* refer to conditions near the end of the month. The water level in each key observation well is compared with average level for the end of the month determined from the entire past record for that well or from a 30-year reference period, 1951–80. *Changes in ground-water levels*, unless described otherwise, are from the end of the previous month to the end of the current month.

Dissolved solids and temperature data for September are given for six stream-sampling sites that are part of the National Stream Quality Accounting Network (NASQAN). Dissolved solids are minerals dissolved in water and usually consist predominantly of silica and ions of calcium, magnesium, sodium, potassium, carbonate, bicarbonate, sulfate, chloride, and nitrate. Dissolved-solids discharge represents the total daily amount of dissolved minerals carried by the stream. Dissolved-solids *concentrations* are generally higher during periods of low streamflow, but the highest dissolved-solids *discharges* occur during periods of high streamflow because the total quantities of water, and therefore total load of dissolved minerals, are so much greater than at time of low flow.

METRIC EQUIVALENTS OF UNITS USED IN THE NATIONAL WATER CONDITIONS

1 foot = 0.3048 meter

1 acre-foot = 1,233 cubic meters

1 million cubic feet = 28,320 cubic meters

1 cubic foot per second =
0.02832 cubic meters per second =
1.699 cubic meters per minute

1 cubic foot per second · day = 2,447 cubic meters

1 mile = 1.609 kilometers

1 square mile = 259 hectares = 2.59 square kilometers

1 million gallons = 3,785 cubic meters =
3.785 million liters

1 million gallons per day = 694.4 gallons per minute =
2.629 cubic meters per minute =
3,785 cubic meters per day

(Round-number conversions, to nearest four significant figures)

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